Grundy Co.
0630605012
Green A.P. Refractories
ILD 049136658
SF/HRS

Site Team Evaluation Prioritization

CERCLA Report

Illinois Environmental Protection Agency

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0345
Wear C.

Appendix

VOLUME 2

1. SITE BACKGROUND

1.1 INTRODUCTION

On September 30, 1994 the Illinois Environmental Protection Agency's CERCLA Site Assessment Program was tasked by the U.S. Environmental Protection Agency (USEPA) to conduct a Site Team Evaluation Prioritization (STEP) of the Green A.P. Refractories site.

This investigation was undertaken by the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 40 CFR, 1980 as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986.

Green A.P. Refractories was initially placed on the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) in August of 1980, due to the State of Illinois concerns that past site activities may have caused soil and sediment contamination of the surrounding wetlands and nearby Kankakee River.

In July of 1995 the Illinois EPA's CERCLA Site Assessment Unit prepared a Site Team Evaluation Prioritization Work Plan for Green A.P. which was submitted to the Region V Offices of USEPA for review. A site safety plan was also prepared at this time and after being reviewed by the Illinois EPA's Office of Chemical Safety, the field activity portion of the inspection occurred on August 10,

1995. The sampling portion of the CERCLA Inspection included the collection of 11 sediment and two water samples.

1.2 SITE DESCRIPTION

The site is located at Rural Route #1 near Morris, Illinois. The site is part of a formerly strip mined area and is approximately 596 acres in size. Currently all of the mined areas contain water and cover approximately sixty percent of the site. This water is clear and had a ph of (5.0). The undisturbed areas are well vegetated and showed no signs of having been impacted by past site activities. The production complex and one house are present within the property boundaries of the original facility. The production buildings appear to be empty, but the house is occupied. Drinking water for this house is obtained from an on-site production well. This well is the only water source present and was originally used by A.P. Green in various manufacturing processes. (See Figure 1, Site Location Map and Figure 2, Site Topographic Map.

To the east of the site is a cooling lake for the Dresden Power Station and the Kankakee River. Northeast is the Dresden Power Station, and to the north are scattered wetland areas and a General Electric nuclear waste storage facility. Northwest and west of the site are Goose Lake Prairie State Park, Heidecke Lake and the Illinois River. Continuing south are scattered single family residences, residential developments and several previously strip-

mined areas.

1.3 SITE HISTORY

A.P. Green began operations in 1963, at this location and originally mined clay from old strip mines located on-site. This clay was located three to twenty feet below the ground surface and was used to manufacture refractory bricks. After the mining operation stopped, A.P. Green produced alumina-chromic oxide plastics for use in high temperature environments. Materials generated from these operations were allegedly recycled and used as product. This facility was active until 1986, when operations were moved to other A.P. Green Plants. The production building remains and according to A.P. Green it is empty. As mentioned earlier the house located on facility property is occupied.

During 1977 and 1978, A.P. Green accepted sludge from the Metropolitan Sanitary District of Greater Chicago (MSDGC). This sludge was used as a nutrient for depleted soils and to neutralize the acid water in the "clay pits". Analysis of the sludge has revealed he presence of cadmium, chromium, copper, lead, nickel, zinc, and mercury.

In 1981 A.P. Green filed a CERCLA 103C Notification of Hazardous Waste Site form and in 1984 IEPA performed a CERCLA preliminary assessment at the site. IEPA again inspected the site in 1984 in response to a complaint that A.P. Green had improperly disposed of six transformers. Site representatives denied any such activities

and no evidence of transformer disposal was found. In 1986, the Region 5 Offices of USEPA Field Inspection Team (FIT), Ecology and Environment inspected the facility and identified sludge, acids and bases as areas of possible concern. A 1993 Site Inspection Prioritization Report conducted by B&V Waste Science and Technology Corporation also identified heavy metals from the sludge as an area of concern.

1.4 REGULATORY STATUS

Regulatory involvement at this site is limited to the above mentioned CERCLA inspections by the Illinois EPA and USEPA. The facility was never regulated under the Resource Conservation Recovery Act, (RCRA) and was not part of any regular inspections by either the Illinois EPA or USEPA. Given the years of operation and the federal and state environmental regulations which existed during this time, the site does not fall under the jurisdiction of the Atomic Energy Act (AEA), Toxic Substances Control Act (TSCA), Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), or the Uranium Mill Tailings Radiation Control Act (UMTRCA).

2 SIP ACTIVITIES

This section contains information gathered during the preparation of the formal CERCLA Inspection and previous IEPA activities involving this site. These activities included the reviewing of Illinois EPA records and preparation of the work plan and interview with the current site owner.

2.1 RECONNAISSANCE ACTIVITIES

In June of 1995 a reconnaissance visit of A.P. Green was made by Mr. Mark Wagner of the Illinois EPA. Access to the site was not controlled and a gate at the intersection of the plant road and Dresden Road was open. A Sheriff's Deputy was patrolling the facility and informed the author that A.P. Green had sold the property in the early 1990s. The deputy also stated that the on-site house was occupied, but the manufacturing buildings were empty.

On site the author noted that all of the "clay pits" had water levels one to two feet below the ground surface. The largest of these was directly south of the plant and had very clear water with no signs of plant or animal life. The depth of the pits could not be determined at this time, but appeared to be greater than 10 feet. Water flow from these areas is believed to be channeled to the eastern end of the site through a series of ditches and small ponds. Near the entrance to the site this water is directed into one large culvert and flows under Dresden Road.

Finding the location of the sludge applications was not possible because of the time interval between that activity and this visit. No visible signs of stained soils, stressed vegetation or waste piles were noted.

2.2 INTERVIEWS

On August 10, 1995 prior to the collection of any samples the author met with one of the current site owners and a consultant for A.P. Green. At this time the author explained the general program objectives of the Comprehensive Environmental Response Compensation Liability Act. Further emphasis was place on the need to collect sediment samples from this site based on the past activities of A.P. Green. The consultant for A.P. Green was not familiar with this plant and could not provide any specific information on the site or on its past activities. The current owner had a working knowledge of the site because he frequently walks it during hunting season and has never noticed any suspicious areas. He also stated that water depth of the main pit is approximately 40 feet. Future plans for the property include a residential development centered around the main water body and the recreational use of it. As previously mentioned the site inspection was unable to determine the location of the area that received the sludge applications.

2.3 SAMPLING ACTIVITIES

The CERCLA Site Team Evaluation Prioritization field sampling activities took place on August 9 and 10, 1995. Eight on-site and three off- site sediment samples and two residential water samples were collected during this inspection. The sediment samples were collected using stainless steel trowels and augers. All sampling was performed in accordance with IEPA sampling methods and procedures. The sediment samples were taken to determine if

contaminants were present on site and if they had migrated off-site. The water samples were taken to assess the possibly that activities at the site have adversely affected the underlying groundwater. Figure 3, identifies the sample locations from the August 1995 SIP. Sample descriptions are summarized in Table 1.

2.4 SAMPLING RESULTS

Several semivolatile organic and inorganic substances were detected at numerous sediment sample locations during the CERCLA STEP. On site sample points reported elevated levels of inorganic materials and off-site sediment samples also showed elevated levels of inorganic contaminants. Key samples with levels and contaminants are presented in Table 2.

The complete analytical data package for A.P. Green is located in Appendix D, and contains a copy of the Target Compound List (TCL) and data qualifiers used by USEPA.

3 SITE SOURCES

3.1 SOURCE DEFINITION

One source was identified at A.P. Green this is the contaminated sediment in the clay-pits. Ecology and Environment has calculated the area of these pit to be approximately 200 acres. The 1995, CERCLA STEP documented elevated inorganic sediment levels in all of

the on-site samples. These inorganic were known to be at higher

concentration in the sludge applied to the site. The Removal Action Levels are not applicable to the sediment samples, but comparison of these levels to the Ontario Quality Guild lines for Sediment revealed the on-site sediment exceeded the lowest effect level for arsenic and chromium. The severe effect level was also exceeded for cadmium, copper, and zinc with the open water disposal level for cobalt being approached.

4 MIGRATION PATHWAYS

4.1 SURFACE WATER PATHWAY

The surface pathway starts where surface water run-off from the site enters the first perennial water body. This location is referred to as the probable point of entry (PPE). The PPE for A.P. Green is located at any point where this run-off enters the on-site ponds. Over flow from these ponds is combined and directed under Dresden Road; traveling east 400 feet along this route is the beginning of an engineered perineal water route. This route flows an additional 3000 feet and terminates at the Kankakee River. The Kankakee River flows an additional mile and combines with the Des Plains River and at this point becomes the Illinois River which completes the surface water route for the site. A sediment sample taken 2000 feet downstream of the PPE reported results that exceeded the Ontario Sediment Standards for lowest effect levels for arsenic, copper, and zinc. Severe effect

levels were also exceeded for cadmium and the cobalt levels were above the open water disposal Guild lines.

The Department of Conservation has indicated the presence of three state-endangered and four state-threatened species within a one mile radius of the site. They also emphasize that portions of the Goose Lake Prairie State Park are within one mile of the site. At this time it does not appear that any of the runoff from the site is directed toward the park.

4.2 SOIL EXPOSURE PATHWAY

Due to the specific activities that have brought attention to this site it is believed that they would not impact the soil exposure pathway. As mentioned earlier these activities consisted of applying sludge to the strip-mined areas. No signs of contaminated soils, waste piles or on-site disposal areas were located and no soil samples were collected during this STEP. Other than the areas strip-mined, which are currently full of water, the terrain and vegetation appears to be untouched and normal.

4.3 GROUNDWATER PATHWAY

The site is situated on a broad, flat, upland area near the Illinois and Kankakee Rivers. The soils in this area are comprised of the Bryce-Shade land-High Gap association which are described as: moderately deep, slowly permeable to moderately

permeable, nearly level and gently sloping, poorly drained to moderately well drained soils. In Bryce soils this layer is silty clay loam or silty clay, in Shade land soils it is silty loam, and in High Gap soils it is a loam. The underlying material is inter-bedded rippable sandstone and shale bedrock.

This area has a shallow sand and gravel unit that is hydraulically connected to a shallow limestone aquifer. Near the site this aquifer is within 11 feet of the ground surface. The private wells around the site are approximately 100 feet or greater in depth and the water from them has a strong sulfur smell associated with it. No municipal water system are located within three miles of the site.

Two residential water samples were collected during this CERCLA STEP. One was located on-site from a production well that has been converted for use by a house that is also located on-site. The other residential water sample was collected from a well within a half-mile of the site. No specific information regarding well depth is available on either well. They both are reportedly not screened in the shallow sand and gravel aquifer or the shallow limestone aquifer, but from a deeper unit. They both yield highly mineralized water that has a strong sulfur odor.

4.4 AIR PATHWAY

The closest resident is on-site but the air pathway is not a

concern at this time.

A.P. Green
Refractories

SAMPLE DESCRIPTIONS

TABLE 1.

SAMPLE #	DEPTH	APPERANCE	LOCATION
X201	0-6 inches	dark brown clay heavy organic	Goose Lake State Park small pond near the visitor center
X202	0-6 inches	brown, silty clay organic	nrothwest end of site, small pond north side of pond
X203	0-6 inches	brown, silty clay silt	southwest corner of site, small pond west side of pond
X204	0-4 inches	gray clay over an organic layer, over brown clay	middle of southern protionof site, ditch that flood 2-3 acres then flows east
X205	0-6 inches	brown, gray clay	low land area north of buildings northwest of on-site house
X206	0-3 inches	black, organic clay X205	southeast of buildings mixing point of mined areas & north area runoff
X207		duplicate of X206	
X208	0-6 inches	black, organic clay light brown	50' west of Dresden Road main drainage leading off-site
X209	4-5 inches	organic, gray clay	west side of drainage culvert leading off-site
X210	0-5 inches	gray clay with some organics	east side of drainage culvert runoff route to Kankakee River
X211	0-6 inches	sandy, silty clay	3400' east of Dresden Road near a fence blocking access to the river

ILD 049136658

TABLE 2. Key Sample Summary

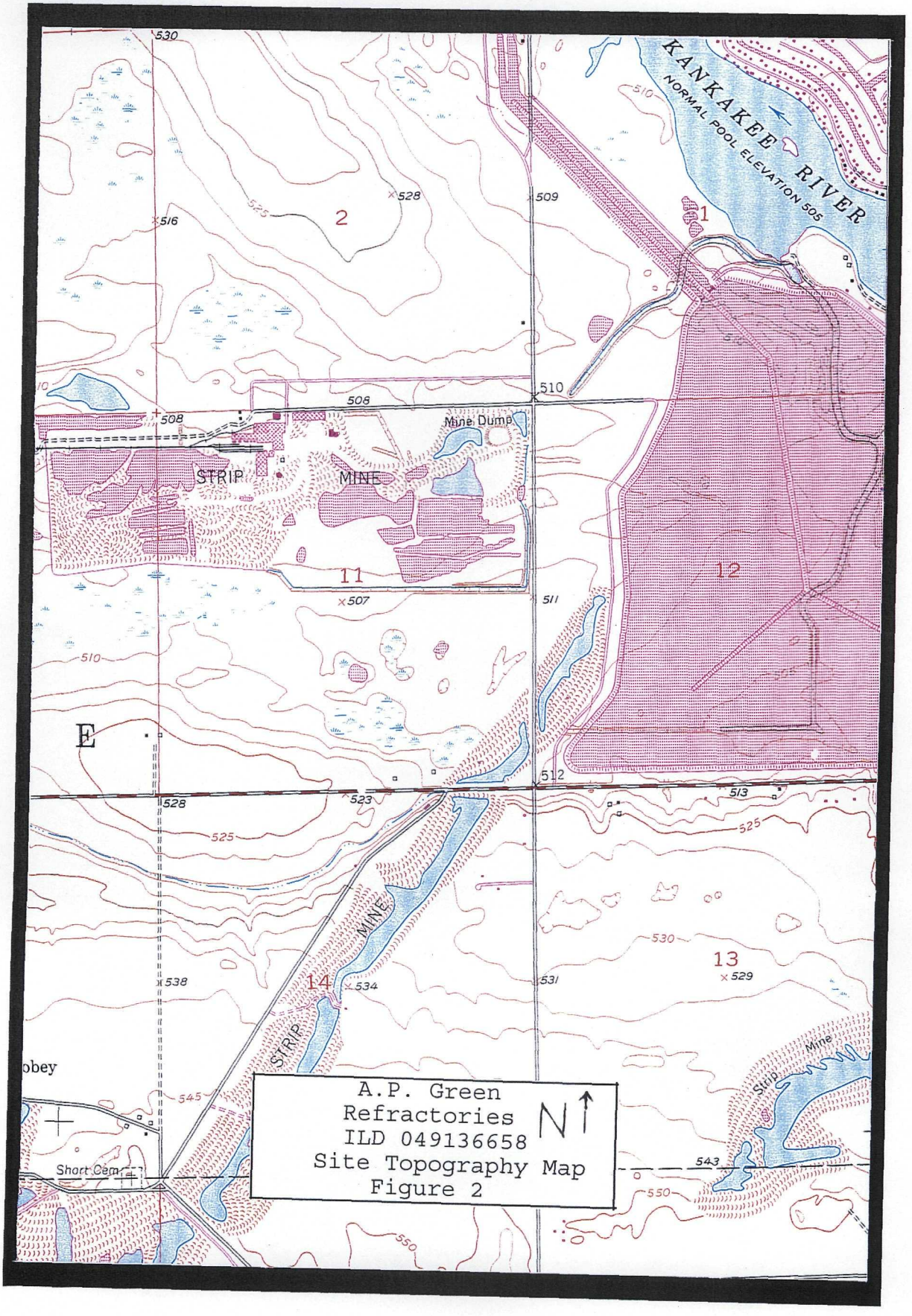
SITE NAME: A.P. Green Refractories
ID 049136658

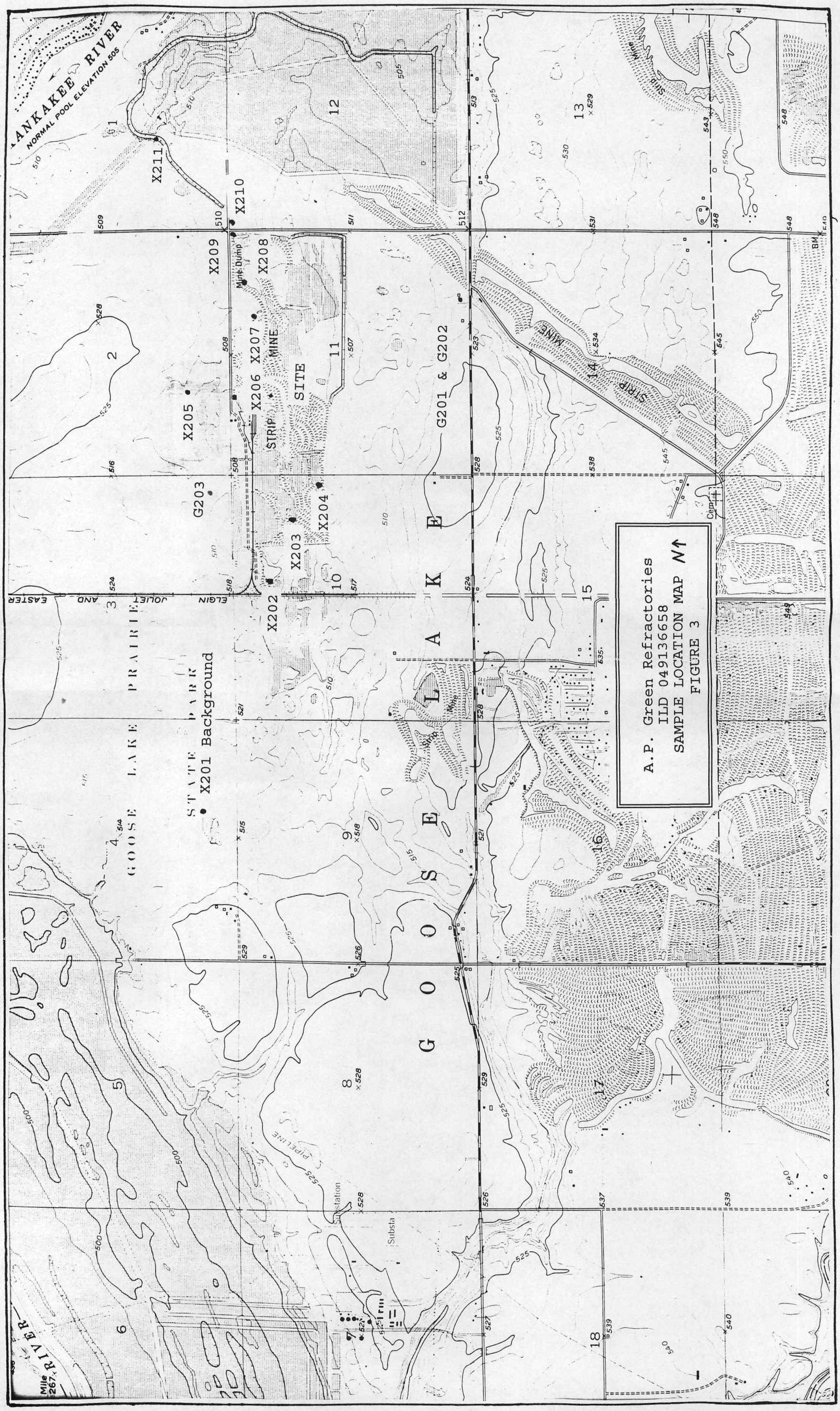
SAMPLING POINT	G201	G202	G203
PARAMETER			
INORGANICS ug/l			
	95IE24S	95IE24D	95IE24SO2
Aluminum	80U	90	80U
Arsenic	0.1	0.1U	0.1U
Barium	21	21	19
Cadmium	0.3	0.2U	0.2U
Calcium	145000	146000	49000
Copper	7	6U	6U
Iron	1140	1610	388
Lead	7	5	4
Magnesium	71000	71000	23000
Manganese	37	44	5U
Potassium	26000	26000	19000
Sodium	90000	89000	143000
Vanadium	5	5U	5U

	G201	G202	G203
SEMIVOLATILES ug/l			
	95IE24S	95IE24D	95IE24SO2
4-Chlor	5U	2J	5U
3-Nitro	20U	9J	20U
4-Nitro	20U	4J	20U

PARAMETER	X201	X202	X203	X204	X205	X206	X207	X208	X209	X210	X211
VOLATILES ug/kg	EAQC2	EAQC3	EAQC4	EAQG4	EAQG5	EAQG6	EAQG7	EAQG8	EAQG9	EAQG1	EAQG2
Methylene Chloride	34	23U	37	25U	31U	79	58U	40	32U	51	20U
Acetone	25	220J	27	17U	18U	52	27J	110	100	310	88
2-Butanone	15U	86	17U	17U	18U	28U	29U	14U	21U	83	29
Trichloroethene	15U	15U	17U	17U	18U	28U	29U	14U	21U	20U	15U
SEMIVOLATILES ug/kg	EAQC2	EAQC3	EAQC4	EAQG4	EAQG5	EAQG6	EAQG7	EAQG8	EAQG9	EAQG1	EAQG2
Benzo(b)fluoranthene	480U	500U	570U	570U	56J	490J	110J	440U	44J	660U	510U
Benzo(k)fluoranthene	480U	500U	570U	570U	49J	390J	110J	23J	36J	660U	510U
Benzo(a)pyrene	480U	500U	570U	570U	64J	510J	140J	26J	44J	660U	510U
Indeno(1,2,3-cd)pyrene	480U	500U	570U	570U	67J	490J	110J	440U	40J	660U	510U
Dibenz(a,h)anthracene	480U	500U	570U	570U	590U	120J	970U	440U	700U	660U	510U
Benzo(g,h,i)perylene	480U	500U	570U	570U	63J	540J	120J	24J	47J	660U	510
STICIDES ug/kg											
Heptachlor	2.5U	2.6U	2.9UJ	2.9U	3.4	4.9U	5.0U	2.3U	3.6UJ	43UJ	2.6UJ
Endrin Aldehyde	4.8U	5.0U	8.6UJ	5.7U	12	9.4U	9.7U	4.5U	12UJ	13UJ	6.7UJ
INORGANICS mg/kg	X201	X202	X203	X204	X205	X206	X207	X208	X209	X210	X211
	MEAEQ1	MEAEQ2	MEAEQ3	MEAET4	MEAET5	MEAET6	MEAES5	MEAES6	MEAES7	MEZN39	MEZN40
Aluminum	3530	3340	3350	8040	6440	9810	7320	17900	3120	2080	13500
Arsenic	3.9	6.4	15.0	21.7	11.8	5.6	5.6	10.9	7.4	5.6	9.1
Barium	29.9B	15.6B	46.9	84.3	62.2B	95.3	85.2	103B	40.1B	78.0	35.1B
Beryllium	0.49B	0.90B	0.59B	2.0	1.5B	2.1	1.5B	4.1	0.71B	0.70B	4.8
Cadmium	0.27U	12.4	2.4	5.6	13.8	12.7	9.1	38.1	8.2	0.27U	28.4
Chromium	4.7	7.4	8.9	9.5	9.8	12.2	10	31.2	5.9	4.8	13.1
Cobalt	4.9B	22.6	4.6B	8.0B	8.5B	20.7	19.6	49.0	18.7	3.6B	56.1
Copper	14.0	30.1	47.6	39.7	33.8	31.5	26.0	111	31.1	44.8	69.9
Lead	45.2	22.0	31.9	40.3	26.0	25.5	21.1	39.7	19.4	17.9	20.4
Magnesium	229B	424B	363B	448B	676B	3090	2570	1720B	3020	13400	2670
Manganese	48.6	184	40.1	75.5	80.0	96.8	105	142	195	105	249
Nickel	7.2B	48.8	9.4	28.9	36.5	54.2	42.3	232	46.0	19.4	172
Selenium	0.65B	2.9	12.9	2.5	2.1	3.0	2.8	42.9	7.5	21.1	7.1
Thallium	100B	1.6B	3.7	4.2	1.1B	1.6B	1.3B	1.1B	1.7B	1.3B	1.3
Vanadium	9.8B	8.4B	24.7	10.1B	17.5	15.9B	13.9	24.7B	11.1B	57.0	14.4
Zinc	8.5	214	44.5	150	182	306	249	825	461	7.8	719

A.P. Green
Refractories
ILD 049136658
Site Location Map
Figure 1


KANKAKEE RIVER
NORMAL POOL ELEVATION 505
Mine Dump
STRIP
MINE
Short Cem
obey
A.P. Green
Refractories
ILD 049136658
Site Topography Map
Figure 2
N


KANKAKEE RIVER
NORMAL POOL ELEVATION 505
X211
X210
X209
X208
X207
X206
X205
X204
X203
X202
X201 Background
G201 & G202
G203
Mine Dump
STRIP MINE
STRIP MINE
STATE PARK
GOOSE LAKE PRAIRIE
ELGIN JOLIET AND EASTER
PIPELINE
Substation
Substa
Mile 267 RIVER
A.P. Green Refractories
ILD 049136658
SAMPLE LOCATION MAP
FIGURE 3
N

SDMS US EPA Region V

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Site 4-Mile Radius Map

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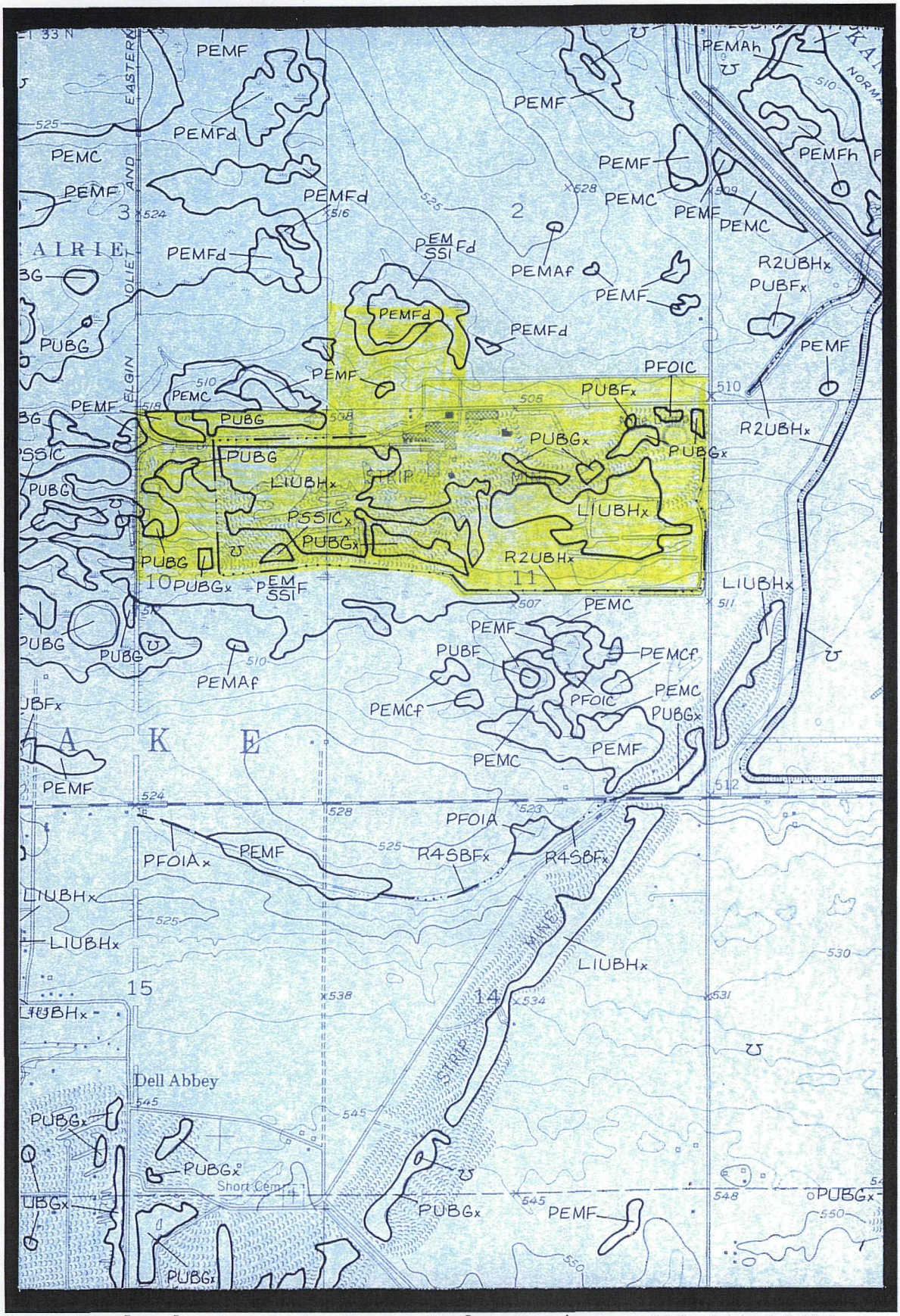
APPENDIX A
4 MILE RADIUS MAP

APPENDIX B
AREA WETLAND MAP



Area Wetlands Map A.P. Green Refractories - ILD 049136658

N

APPENDIX C
TARGET COMPOUND LIST & DATA QUALIFIERS

TARGET COMPOUND LIST

Volatile Target Compounds

Chloromethane	1,2-Dichloropropane
Bromomethane	cis-1,3-Dichloropropene
Vinyl Chloride	Trichloroethene
Chloroethane	Dibromochloromethane
Methylene Chloride	1,1,2-Trichloroethane
Acetone	Benzene
Carbon Disulfide	trans-1,3-Dichloropropene
1,1-Dichloroethene	Bromoform
1,1-Dichloroethane	4-Methyl-2-pentanone
1,2-Dichloroethene (total)	2-Hexanone
Chloroform	Tetrachloroethene
1,2-Dichloroethane	1,1,2,2-Tetrachloroethane
2-Butanone	Toluene
1,1,1-Trichloroethane	Chlorobenzene
Carbon Tetrachloride	Ethylbenzene
Vinyl Acetate	Styrene
Bromodichloromethane	Xylenes (total)

Base/Neutral Target Compounds

Hexachloroethane	2,4-Dinitrotoluene
bis(2-Chloroethyl)Ether	Diethylphthalate
Benzyl Alcohol	N-Nitrosodiphenylamine
bis(2-Chloroisopropyl)Ether	Hexachlorobenzene
N-Nitroso-Di-n-Propylamine	Phenanthrene
Nitrobenzene	4-Bromophenyl-phenylether
Hexachlorobutadiene	Anthracene
2-Methylnaphthalene	Di-n-Butylphthalate
1,2,4-Trichlorobenzene	Fluoranthene
Isophorone	Pyrene
Naphthalene	Butylbenzylphthalate
4-Chloroaniline	bis(2-Ethylhexyl)Phthalate
bis(2-chloroethoxy)Methane	Chrysene
Hexachlorocyclopentadiene	Benzo(a)Anthracene
2-Chloronaphthalene	3,3'-Dichlorobenzidene
2-Nitroaniline	Di-n-Octyl Phthalate
Acenaphthylene	Benzo(b)Fluoranthene
3-Nitroaniline	Benzo(k)Fluoranthene
Acenaphthene	Benzo(a)Pyrene
Dibenzofuran	Indeno(1,2,3-cd)Pyrene
Dimethyl Phthalate	Dibenz(a,h)Anthracene
2,6-Dinitrotoluene	Benzo(g,h,i)Perylene
Fluorene	1,2-Dichlorobenzene
4-Nitroaniline	1,3-Dichlorobenzene
4-Chlorophenyl-phenylether	1,4-Dichlorobenzene

Acid Target Compounds

Benzoic Acid	2,4,6-Trichlorophenol
Phenol	2,4,5-Trichlorophenol
2-Chlorophenol	4-Chloro-3-methylphenol
2-Nitrophenol	2,4-Dinitrophenol
2-Methylphenol	2-Methyl-4,6-dinitrophenol
2,4-Dimethylphenol	Pentachlorophenol
4-Methylphenol	4-Nitrophenol
2,4-Dichlorophenol	

Pesticide/PCB Target Compounds

alpha-BHC	Endrin Ketone
beta-BHC	Endosulfan Sulfate
delta-BHC	Methoxychlor
gamma-BHC (Lindane)	alpha-Chlorodane
Heptachlor	gamma-Chlorodane
Aldrin	Toxaphene
Heptachlor epoxide	Aroclor-1016
Endosulfan I	Aroclor-1221
4,4'-DDE	Aroclor-1232
Dieldrin	Aroclor-1242
Endrin	Aroclor-1248
4,4'-DDD	Aroclor-1254
Endosulfan II	Aroclor-1260
4,4'-DDT	

Inorganic Target Compounds

Aluminum	Manganese
Antimony	Mercury
Arsenic	Nickel
Barium	Potassium
Beryllium	Selenium
Cadmium	Silver
Calcium	Sodium
Chromium	Thallium
Cobalt	Vanadium
Copper	Zinc
Iron	Cyanide
Lead	Sulfide
Magnesium	Sulfate

SPECIAL PESTICIDE LIST

2,4-D

Atrazine

Metolachlor -- Dual

Cyanazine -- Bladex

Fonofos -- Dyfonate

EPTC -- Eptam, Eradicane

Phorate

Metribuzin -- Lexone, Sencor

Trifluralin -- Treflan

Diazinon

Alachlor -- Lasso

U.S.E.P.A. DEFINED DATA QUALIFIERS

QUALIFIER	DEFINITION ORGANICS	DEFINITION INORGANICS
• U	Compound was tested for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL is also multiplied by two, to account for the fact that only half of the extract is recovered.	Analyte was analyzed for but not detected.
• J	Estimated value. Used when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria and the result is less than the sample quantitation limit but greater than zero. Used in data validation when the quality control data indicate that a value may not be accurate.	Estimated value. Used in data validation when the quality control data indicate that a value may not be accurate.
• C	This flag applies to pesticide results where the identification is confirmed by GC/MS.	Method qualifier indicates analysis by the Manual Spectrophotometric method.
• B	Analyte was found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action	The reported value is less than the CRDL but greater than the instrument detection limit (IDL).
• D	Identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor as in the "E" flag above, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and all concentration values are flagged with the "D" flag.	not used

QUALIFIER	DEFINITION ORGANICS	DEFINITION INORGANICS
• E	Identifies compounds whose concentrations exceed the calibration range for that specific analysis. All extracts containing compounds exceeding the calibration range must be diluted and analyzed again. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses must be reported on separate Forms I. The Form I for the diluted sample must have the "DL" suffix appended to the sample number.	The reported value is estimated because of the presence of interference
• A	This flag indicates that a TIC is a suspected aldol concentration product formed by the reaction of the solvents used to process the sample in the laboratory.	Method qualifier indicates analysis by Flame Atomic Absorption (AA).
• M	not used	Duplicate injection (a QC parameter) not met.
• N	not used	Spiked sample (a QC parameter) recovery not within control limits.
• S	not used	The reported value was determined by the Method of Standard Additions (MSA).
• W	not used	Post digestion spike for Furnace AA analysis (a QC parameter) is out of control limits of 85% to 115% recovery, while sample absorbance is less than 50% of spike absorbance.
• *	not used	Duplicate analysis (a QC parameter) not within control limits.
• +	not used	Correlation coefficient for MSA (a QC parameter) is less than 0.995.

QUALIFIER	DEFINITION ORGANICS	DEFINITION INORGANICS
• P	not used	Method qualifier indicates analysis by ICP (Inductively Coupled Plasma) Spectroscopy.
• CV	not used	Method qualifier indicates analysis by Cold Vapor AA.
• AV	not used	Method qualifier indicates analysis by Automated Cold Vapor AA
• AS	not used	Method qualifier indicates analysis by Semi-Automated Cold Spectrophotometry.
• T	not used	Method qualifier indicates Titrimetric analysis.
• NR	The analyte was not required to be analyzed.	The analyte was not required to be analyzed.
• R	Rejected data. The QC parameters indicate that the data is not usable for any purpose.	Rejected data. The QC parameters indicate that the data is not usable for any purpose.